B. There Is No Reasonable Alternative Available That Would Permit The Millennium Project To Be Constructed In A Manner Consistent With New York's Coastal Management Program

The third, and last, finding that the Secretary must make to conclude that the Millennium Project is "consistent with the objectives" of the CZMA and thus satisfies Ground is that "[t]here is no reasonable alternative available which would permit the activity to be conducted in a manner consistent with the enforceable policies of the management program." 15 C.F.R. § 930.121(c). The Secretary's CZMA decisions generally require the state agency to identify in its objection to a project any "available" and "reasonable" alternatives,[42] to assert that any identified "available" and "reasonable" alternatives are also consistent with the state's coastal management program,[43] and to describe those alternatives with specificity.[44] If the state agency describes "available" and "reasonable" alternatives that are consistent with the coastal management program with sufficient specificity, then the burden shifts to the appellant to show that those alternatives are unavailable or unreasonable.[45]

The NYSDOS's objection to the Millennium Project identified three alleged alternatives that were asserted to be consistent with New York's coastal management program. The NYSDOS described those alternatives in the following terms (Millennium Exhibit 10, at 15):

> "[1] terminate the proposed pipeline in the vicinity of Bowline Point in Rockland County on the west side of the Hudson River; [2] route the Hudson River crossing of the pipeline north and

[42] Decision and Findings in the Consistency Appeal of Mobil Exploration & Producing U.S. Inc. (June 20, 1995), at 85).
[43] Decision and Findings in the Consistency Appeal of Virginia Electric & Power Co. (May 19, 1994), at 161.
[44] *Id.* at 162.
[45] *Id.*

> outside of the designated Haverstraw Bay habitat, near or adjacent to the existing Algonquin pipeline crossing of the Hudson River, and consider existing pipeline rights-of-way that avoid the New York City drinking water supply and delivery systems; or [3] use excess capacity in the existing Algonquin pipeline."

However, each of these three proposed alternatives was advanced in the proceeding before the FERC, thoroughly examined, and rejected as infeasible. *See* Millennium Initial Br. at 96-106.

In a textbook example of gamesmanship, the NYSDOS subsequently announced in its initial brief to the Secretary that, in the five months since it had issued its objection to the Project, it had discovered a grand total of **22** additional "available" and "reasonable" route alternatives that of course must be considered fully by the Secretary in this proceeding.[46] Not to be outdone, Croton advances the same 22 alternatives, adds a few more, reexamines alternatives already flatly rejected by the FERC, and submits a "study" in support of its conclusions. Villages Exhibit 2.

While both the NYSDOS and Croton cite a provision in NOAA's regulations that purportedly supports their outpouring dump of new "alternatives," this is obviously a tactical ploy and not a serious exercise. Drawing lines on a map is simple, but there is no substitute for the application of expert pipeline engineering analysis and basic field surveys to review supposed alternatives. Moreover, the FERC has already applied its expert judgment to the search for feasible alternatives, and has concluded that there are none.

Nevertheless, none of these purported alternatives is either available or reasonable. FERC Chairman Wood emphasized in his comments to the Secretary that the FERC conducted an "exhaustive review of alternative routes for this project and their respective

impacts." FERC Chairman Comments, at 1. The FERC's analysis *"focused in particular on the appropriate location for crossing the Hudson River and the impacts of the project on surrounding coastal areas, the matters which are the subject of the instant appeal to the Secretary." Id.* (emphasis added). On the basis of this "exhaustive review," the FERC has flatly concluded that (FERC Comments, at 4-5 (emphasis added)):

> *"[T]here is no reasonable alternative available which would permit the Millennium Project to be constructed consistent with the enforceable policies of New York's Coastal Management Plan.* In terms of the crossing itself, no one has identified, and the Commission is not aware of, any feasible technology or approach that would allow the pipeline crossing to be constructed in a significantly less intrusive way. The NYSDOS has suggested that the crossing of the Hudson River be located either upstream or downstream of the proposed Haverstraw Bay crossing site . . . . [T]he Commission has previously evaluated those crossing possibilities in its environmental review of the Millennium Project and rejected both locations on a variety of grounds, including unacceptable environmental impacts. The Commission also examined the alternative of using capacity on existing pipelines, such as Algonquin, and concluded that this alternative was not viable."

Secretary of Energy Abraham concurs in the FERC's conclusion that there is no reasonable alternative available. As he states (Secretary of Energy Comments, at 1):

> "The Department of Energy believes that the FERC has correctly determined . . . that there is no reasonable alternative to the project. Because FERC has responsibly and thoroughly evaluated the environmental issues inherent in the Millennium Pipeline Project, we concur with FERC's conclusion that the proposed Hudson River crossing at Haverstraw Bay is the preferred route for the Millennium Pipeline Project."

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[46] NYSDOS Br. at 86-87 (five river crossings, nine western approaches, five eastern approaches, and three routes around the Wellfield, Arboretum, and Siphon).

The NYSDOS also suggests that Millennium should have consulted further with the NYSDOS regarding alternative routes after the NYSDOS issued its objection. NYSDOS Br. at 85-86. The NYSDOS conveniently fails to mention that both the FERC and Millennium gave NYSDOS officials a personal tour of the suggested alternative routes across the Hudson River in November of 1999. Moreover, because Project alternatives had been comprehensively studied and rejected by the FERC, including the alternatives suggested by the NYSDOS, Millennium notified the NYSDOS after the objection was issued that it would appeal the objection, which was its only recourse under the CZMA and NOAA's regulations. The notion that Millennium had any further obligation to consult with the NYSDOS regarding alternatives that had been discussed with the NYSDOS more than two years earlier is ridiculous.

While Millennium was immediately skeptical that the additional alternatives conveniently "found" by the NYSDOS and Croton were viable, given the years of effort that Millennium has spent in a search for better routes across the Hudson, Millennium has nevertheless accorded these "alternatives" serious consideration Millennium therefore commissioned a detailed, on-site engineering assessment of each of the alternatives by Baker Engineering NY, Inc., a firm with decades of experience in pipeline routing, design, and construction; conducted its own on-site inspection of each alternative; and toured each alternative with Federal and state officials. The Baker Report (Millennium Exhibit 78) confirms the FERC's view that there are no feasible alternatives; confirms Millennium's view that there are no feasible alternatives; and should persuade all responsible Federal and state officials that there are no feasible alternatives.

1. The New Hudson River Crossing Alternatives Proposed By The NYSDOS And Others Are Not Reasonable And Available Alternatives

In its initial brief in this proceeding, the NYSDOS for the first time suggests ten new routing alternatives respecting Haverstraw Bay, all of which fail due to a combination of unavailable workspace, land use, and impact constraints. The NYSDOS also unavailingly (1) renews the three proposed alternatives set forth in its objection to the Project; (2) vaguely asserts that unspecified "diversions" can be made to avoid the Arboretum and the Village Wellfield; and (3) suggests a "deviation from the Sprain Brook Parkway to the New York State Thruway right-of-way" to avoid the Bryn Mawr Siphon.

With the aid of the unsigned, unstamped OBG Report, Croton proposes five routing alternatives regarding Haverstraw Bay, some of which were considered in detail in the FEIS, but rejected for good reason. The others are patently infeasible for reasons which would have been apparent had Croton's "expert" performed even a modicum of field inspection or "ground-truthing" of the information on which it relied. Croton likewise suggests routing alternatives respecting the Arboretum and Wellfield; these are unavailable due to construction constraints, and unreasonable due to the lack of any environmental benefit. Additionally, Croton suggests various construction methodology alternatives, which it admits are in the realm of research and development and, hence, "unavailable." Finally, Croton reasserts systems alternatives that were amply considered, but reasonably rejected, during the NEPA review process.

The fatal constraints associated with these suggested alternatives are briefly discussed below and further detailed in the Baker Report (Millennium Exhibit 78). Even a cursory review of that analysis demonstrates two things. First, contrary to the suggestions of the

NYSDOS and Croton that the route selection was a "fly by night" process, the FERC approved the proposed route only after making a detailed, careful, and comprehensive analysis of alternatives (particularly respecting Haverstraw Bay). Second, the alternatives analysis presented in the FEIS and in the Baker Report leads to one inescapable conclusion: there are no reasonable, available alternatives to the approved route of the Millennium Pipeline Project.

a. The Hudson River Crossing Alternatives Are Not Reasonable And Available

The FERC-approved Hudson River crossing at Haverstraw Bay was dictated by a number of factors: (1) the New York City markets to be served; (2) site-specific environmental considerations regarding route feasibility; and (3) the location near the western shore of the Hudson River of the existing pipeline to be incorporated into the Millennium Project. In determining "feasible" pipeline routes across the Hudson River, industry safety and construction standards were, of course, observed (regarding, for example, construction area/staging area size, site access, ROW size, and separation distances from existing pipelines, railroads, and electric transmission lines). In large measure, application of these standards constrained the available Hudson River crossing options, as did the particular site-specific environmental, land use, and human impacts. *See generally* Millennium Exhibit 78 at 7.

In assessing potential crossing locations, Millennium's team of interdisciplinary experts performed an exhaustive review both of available data, as well as dozens of field visits along a 17-mile stretch of the River from Tompkins Cove, New York, south to the Tennessee Pipeline crossing through Piermont Marsh. Despite this effort, no viable alternatives to the Haverstraw Bay crossing location were found. The main constraint was an inadequate on-shore staging area on both banks of the River. Other constraints included the lack of adequate

workspace and human-related congestion on potential approaches to alternate crossing locations on the east and west banks of the River. For these reasons, those routes were rejected. *See generally* Millennium Exhibit 78 at 8.

As is set forth below, the NYSDOS (Routes 1-10) and the Village (Routes 11-15) suggest alternatives here which are infeasible for a variety of reasons, including construction constraints (which render them not available) and the lack of any environmental benefit (which renders them not reasonable). *See also* Millennium Exhibit 78 at 24.

ROUTE 1: Palisades-Rte 45 to Thruway; Palisades-Thruway to Rte 340 -- Tennessee ROW River Crossing -- Tennessee Pipeline ROW to Saw Mill River Parkway *(see* NYSDOS Br. at 88-90, 87-88, 92-93; Villages Br. at 51-56; Villages Exhibit 2 at 13-20;[47] *see also* Baker Report, at 10)

Route 1 follows the Palisades Interstate Parkway ("PIP") south to the Tennessee Gas Pipeline ROW just north of the New York/New Jersey border. It then follows Tennessee's ROW east through Tallman Mountain State Park, Piermont Marsh and across the Hudson River into the Village of Dobbs Ferry. From there, it continues to follow Tennessee's ROW eastward through several residential areas and a private country club, as well as a school and church parking lot, and then reconnects with the FERC-approved route on the South County Trail near the Saw Mill Parkway. Route 1 is the NYSDOS's preferred route, since it would have in the NYSDOS's view "the least overall significant and adverse effects on the natural and human environment." NYUSDOS Br. at 90.

[47] This route is the same as the "Palisades Dobbs Ferry Alternative 1" described in the OBG Report.

Route 1 is not feasible from a design, construction, operation and maintenance perspective in numerous locations, primarily due to an inadequate staging area for the Hudson River crossing at Piermont Marsh, and the lack of any usable workspace along Wickers Creek in residential communities (The Landing and Legend Hollow) in the Village of Dobbs Ferry. *See* Baker Report at 10.

More specifically, Route 1 is not reasonable due to the severe and profound environmental impacts that would result to the PIP and the landowners situated adjacent to the PIP ROW. Route 1 is located within the PIP for approximately 12.6 miles. The PIP is a National Historic Landmark and thus is afforded special status and protection under the National Historic Preservation Act. The centerline of the required pipeline trench would be approximately 25 feet inside the eastern edge of the PIP ROW. The pipeline facilities could not be located immediately adjacent to the highway because other drainage and infrastructure exists in that location. Construction would require clear cutting of most of the mature forest along the east side of the PIP ROW and would produce visible permanent scars where rock has to be blasted and/or trenched. Approximately 99 acres of forest would have to be removed. Thus, contrary to the OBG Report, there is not "ample space within the PIP right-of-way so as not to incur disturbances along the PIP during construction and operation of the pipeline." Villages Exhibit 2 at 14.

Also contrary to the OBG Report (*see id.* at 18), a 75-foot-wide (not 35- to 40-foot wide) workspace would be required to safely and efficiently install the pipeline, particularly given the otherwise limited access of this area. Further, and also contrary to the OBG Report (*id.*), the use of short (20-foot) lengths of pipe for construction is not feasible for a number of reasons. First, 24-inch diameter pipe is not normally available in such short lengths. Second,

short lengths would prevent proper bending of the pipe (required to fit the trench) since the USDOT pipeline safety regulations do not allow bends to occur near the welds. Third, the shorter pipe joints would result in numerous additional field welds and, thus, significantly increase the overall construction duration and cost to install the pipeline. Regardless, O'Brien & Gere's assumption that the use of shorter joints would somehow reduce the workspace requirements for this segment is also incorrect. The size of the workspace is dictated, among other things, by the weight of the pipe string once it is welded together and, consequently, the size of the equipment needed to safely lift and place it in the trench.

Thus, contrary to the OBG Report's erroneous conclusion (*id.* at 14), there most certainly would be "disturbances to the residential areas along the PIP during construction and operation of the pipeline;" moreover, those "disturbances" would be severe, and some impacts would be permanent. Construction along this route would expose hundreds of private residences (located immediately adjacent to the PIP ROW) to the visual and noise impacts associated with the parkway. Trees could not be replanted over the entire ROW, as operations and maintenance activities would require access to the pipeline. At each overpass (approximately 12 in total), the pipeline would have to be located off the PIP ROW for several hundred feet in order to avoid the overpass foundations. The confined spaces on adjacent roads and PIP over/underpasses would cause construction access to be extremely difficult and extremely disruptive. Further, truck traffic would have to be allowed to access the PIP in order to transport the required heavy equipment and materials to the construction locations. Well over several hundred permitted loads would be required to complete pipeline construction along this segment of the PIP. Many loads would be in excess of the weight-bearing design of the existing highway facilities and the adjacent shoulders, leading to significant damage in areas that were just recently restored and/or

enhanced. Although construction could be accomplished along the PIP, the environmental and human impacts would be severe and profound. This renders this segment of Route 1 not "reasonable." *See Virginia Elec & Power*, 1994 NOAA Lexis 3 ., *180 & *200-01 (May 19, 1994) (stating that if there are no environmental advantages, or if an alternative has large adverse impacts, it is not "reasonable").

Route 1 has additional significant adverse environmental and land use consequences. The route parallels Tennessee's ROW for approximately 1.3 miles through Tallman Mountain State Park. Approximately 10 acres of mature forest would have to be removed within this Park. Then, Route 1 passes through the Palisades cliff. Contrary to the OBG Report, Tennessee has taken all the usable space in the existing cut through the Palisades; thus, an estimated 3,700 cubic yards of rock would have to be permanently removed, leaving a highly visible and unsightly scar. This would take place on a 20 to 25 degree slope leading directly to the river and wetlands. The steep incline of the bank is likely to lead to erosion and stability problems (and hence wetland impacts), as evidenced by the obvious erosion resulting from the Tennessee pipeline that was constructed approximately 40 years ago.

On the west shore of the Hudson River, the route through this area crosses the wetland located within the Piermont Marsh. This marsh is designated as a Significant Coastal Fish and Wildlife Habitat. It also has the additional distinction of being one of only 25 National Estuarine Research Reserve locations designated by NOAA nationally. Contrary to the NYSDOS brief and OBG Report, there is no area available for staging on the west shore. Thus, a construction staging area would have to be created, which would involve filling in and trenching at least one acre of previously undisturbed wetland. Adverse effects would likely extend beyond that one acre, however. Due to the lack of stability of the soils in the Piermont Marsh, it is likely

that the trenching would create a swath approximately 150 feet wide, which would take years to be restored to a more natural condition. Accordingly, Route 1 poses very significant environmental consequences to wetlands, significant habitat, and a national estuarine reserve.

Additionally, and contrary to the NYSDOS's assertion, there is no evidence of any permanent channel within the immediate construction area in the vicinity of Piermont Marsh. A permanent stream channel through the Piermont Marsh is located to the north, but could not be used due to routing restrictions along the Palisades cliff. Since there is no staging area at any location at the base of the cliff, a staging area of approximately one acre would have to be created by placing suitable fill material in the wetland at that location.

As on the west side of the Hudson River, no workspace exists to stage the pipeline landing on the east side of the river that is contemplated by Route 1. Approximately one acre of the Hudson River would have to be filled to create the required staging area. However, filling in the Hudson River to create an artificial staging area is not a realistic option, and water flow from Wickers Creek into the Hudson River would be restricted.

From the east shore of the river, the proposed route traverses through the Wickers Creek drainage basin, a steep, narrow draw (2:1 forested slopes on each side) bordered on one side by residences and on the other by an under-construction gymnasium for Mercy College for about 1,000 feet. Tennessee's ROW uses all available space within the basin leaving no room for new construction. Thus, contrary to the OBG Report's claims Villages Exhibit 2, at 17), the steep slopes, coupled with the lack of any available space (due to the existence of residences and other structures), do indeed present the potential for significant impacts if construction were to be attempted along this route.

The Tennessee ROW then passes through dense residential neighborhoods (The Landing and Legend Hollow), a country club (Ardsley Country Club), and local streets that are best characterized as narrow and winding. A large number of residential structures already encroach upon the Tennessee ROW in this area. As a consequence, routing a pipeline adjacent to the Tennessee pipeline in this location would require the destruction of a large number of homes. There is no workspace or ROW to place additional pipeline facilities on or along Tennessee's existing easement, nor is there an effective means to detour traffic and place the pipeline in local streets. Construction within local streets would significantly disrupt local traffic and deny access to private residences for extended periods of time.

In sum, Route 1 presents (1) severe, profound environmental consequences to the PIP, a National Historic Landmark, and Piermont Marsh (which has the unique distinction of being both a significant habitat and a National Estuarine Research Reserve); (2) constructability constraints due to, *inter alia,* the steep narrow draws in the Wickers Creek drainage basin, lack of room in the existing Tennessee ROW, and the lack of any place to land on the east shore of the river or to stage a bore under the railroad; and (3) positively severe human/land use consequences, given the vast number of residences that would be significantly adversely affected (both along the PIP, where they would be permanently subjected to increased noise and aesthetic effects from lack of screening, and in the dense residential neighborhoods of The Landing and Legend Hollow, where there is simply no workspace whatsoever or room to place an additional pipeline, thus necessitating the destruction of a large number of homes). Baker Report, at 10-12. Notably, as demonstrated in photographs accompanying the Baker Report, all of these constraints are patent and would have been revealed had the NYSDOS and Croton (or their alleged experts) conducted a simple field visit to the area. *See* Baker Report, Attachment 6, Segment E: Photos 1

& 2; Segment F: Photo 1; Segment G: Photo 1. Accordingly, given the monumental environmental and human/land use consequences, and the constructability constraints, Route 1 is neither "reasonable" nor "available." *See Virginia Elec & Power, supra* (stating that where there are no environmental benefits, the alternative is not reasonable, and that where there are technical barriers to implementation, the alternative is not available).

ROUTE 2: Palisades-Rte 45 to Thruway; Route 304 to Tennessee ROW -- Tennessee ROW River Crossing -- Tennessee Pipeline ROW to Saw Mill River Parkway (*see* NYSDOS Br. at 90-91, 87-88, 92-93; *see also* Baker Report, at 12)

Route 2 is, likewise, not a viable alternative. Baker Report, at 12. Route 2 is similar to Route 1 in that it starts by following the PIP. However, after approximately 5.1 miles, it leaves the PIP and parallels State Route 304 for about 4.6 miles. The route then parallels the Tennessee ROW and follows it to Tallman Mountain State Park Heading east from there, Route 2 is the same as Route 1

As also would have been evident from a field inspection (which the NYSDOS and Croton seemingly failed to perform), Route 2 is not feasible from a design, construction, operation, and maintenance perspective. This is so for reasons similar to those described for Route 1, above, as well as additional construction constraints along the segment paralleling Route 304. Regarding impacts along the PIP, approximately 40 acres of forest would have to be removed. As for the Route 304 segment, paralleling Route 304 on the east side would be difficult, as it is heavily trafficked and bordered by businesses. It is not possible to construct the pipeline on the west side of Route 304 due to lack of workspace for the required directional drills. Additionally, a portion of this segment follows the Tennessee Pipeline ROW and runs

eastward through Bergen County, New Jersey, where it passes through extremely densely populated areas. *See* Baker Report, Attachment 6, Segment B: Photo 1. Also, the pipeline would share a ROW with a high voltage ConEd electric tower line, and no additional space is available for construction. In some cases it appears that there are permanent structures situated near, if not on top of, the existing pipeline. Further, a 2,000-foot crossing of Lake Tappan would be required. The lake is a reservoir that serves four New Jersey counties and would probably require a horizontal directional drill rather than a lay barge method of construction. With the pipelines and electric lines occupying the available workspace in the ROW, additional ROW would be required at each shore.

In sum, the factors which render Route 2 infeasible are, *inter alia*, (1) severe impacts to the PIP from tree removal; (2) permanent noise and visual impacts to residences adjacent to the PIP right-of-way; (3) removal of the Palisades cliff on the west shore; (4) significant impacts to Piermont Marsh, including permanent filling of at least one acre, as well as impacts from erosion and ongoing stability problems; (5) lack of any space for a landing on the eastern shore or for staging a boring under the railroad; (6) steep, narrow draws in Wickers Creek and, thus, the lack of any workspace or available location to lay a pipeline; (7) lack of any workspace in the Tennessee ROW due to dense population (which would require the destruction of a large number of residences) and actual encroachment by both businesses and residences; (8) significant lane closures along Route 304; and (9) impacts associated with the Lake Tappan crossing, which would require an increased separation distance to prevent damage to the active gas line. Baker Report, at 12. Accordingly, because portions of Route 2 are not constructable, Route 2 is not "available;" because other segments of Route 2 have severe adverse environmental consequences, it is not "reasonable." *See Virginia Elec & Power, supra.*

ROUTE 3: CSX ROW Bowline to Rte 303; CSX ROW-Snake Hill Road to Palisades; Palisades -Thruway to Rte 340 -- Tennessee ROW River Crossing -- Tennessee Pipeline **ROW to Saw Mill River Parkway** (*see* NYSDOS Br. at 91, 87-88, 92-93; *see also* Baker Report, at 13)

For reasons similar to those discussed with respect to Route 1 (*i.e.*, PIP impacts, Piermont Marsh impacts, lack of east shore staging area, constructability constraints in Wickers Creek area/Tennessee ROW), as well as additional construction constraints, Route 3 is also not a feasible alternative. Baker Report, at 13. Route 3 follows the CSX railroad south for approximately 12.9 miles. It then parallels the PIP for approximately 2 miles before connecting with the Tennessee ROW and then follows the balance of Route 1. Other than the route along the railroad, the feasibility constraints and impacts are the same as Route 1, except that only approximately 15.5 acres of clear cutting along the PIP would be required (due to the reduced length).

Route 3 is further fatally flawed (*i.e.*, unconstructable), however, due to numerous locations along the CSX railroad which do not have any workspace or ROW available for use. Some sections have retaining walls that leave only room for trains. *See* Baker Report, Attachment 6, Segment I: Photo 1 In other areas, the engineered rail foundation (bed) is sloped and takes up all available space in the ROW. In many places, there are residences and/or business structures immediately adjacent to the railroad ROW, leaving no pipeline workspace. Some locations are fill areas and have only 10 feet on each side of the rail before they slope up to 40 feet in height. Electric poles typically occupy one side of the ROW, and often drainage ditches along the tracks preclude any workspace for construction. Again, all of these fatal

constructability defects would have been evident to the NYSDOS and O'Brien & Gere had a simple field inspection been conducted.

Also confirming the infeasibility of this route is the fact that the railroad passes beneath Rockland Lake State Park and Hook Mountain State Park through a tunnel. *See* Baker Report, Attachment 6, Segment H: Photo 1. The pipeline cannot be placed in the tunnel because there is not enough room between the track and tunnel walls. Routing around the tunnel would involve permanent clearing and grading steep slopes in Hook Mountain State Park, a National Historic Landmark. These activities would leave a permanent and unsightly scar visible from the Hudson River. Accordingly, Route 3 presents its own significant adverse environmental impacts, and is also not feasible from a design, construction, operation and maintenance perspective.

Lastly respecting Route 3, the OBG Report's suggestion to install the pipeline in casing does not remedy the extant construction constraints along the railroad ROW. *See, e.g.* Baker Report, at 13. Installing the pipeline inside extended lengths of casing, as recommended by O'Brien & Gere, would result in a dangerous and unacceptable situation. The pipeline's cathodic protection system would be jeopardized (due to a shielding effect from over 12.9 miles of casing), and it is extremely likely that the pipeline would electrically short against the casing. This could lead to pipeline structural failure, hence rendering this suggested construction method unacceptable, at the least, if not professionally irresponsible.

In sum, because segments of Route 3 are not constructable, Route 3 is not "available." Further, because other segments of Route 3 have severe adverse environmental consequences, it is also not a "reasonable" alternative. *See Virginia Elec & Power, supra.*

ROUTE 4: Thruway-Algonquin ROW-Kakiat County Park to Palisades-Thruway Intersection; Palisades-Thruway to Rte 340 -- Tennessee ROW River Crossing -- Tennessee Pipeline ROW to Saw Mill River Parkway (*see* NYSDOS Brief, at 91-92, 87-88, 92-93; *see also* Baker Report, at 13)

Route 4 fails for reasons similar to those stated for Route 1 (*i.e.*, PIP impacts, Piermont Marsh impacts, lack of east shore staging area, and constructability constraints in Wickers Creek area/Tennessee ROW), together with additional construction constraints and environmental impacts along the Algonquin ROW and Harriman State Park segment of the route. Baker Report, at 14.

Route 4 is the same as Route 1 except that the initial 5.1 miles of parallel lay in the PIP would be replaced with approximately 3.9 miles along the Algonquin ROW through Harriman State Park (included in the National Register of Historic Places) and approximately 9.1 miles along the New York State Thruway. To construct the Algonquin ROW-Harriman segment, approximately 30 acres of mature forest would have to be removed from Harriman State Park, and a significant amount of blasting and permanent grading would be required.

Further, the Thruway is characterized by steep slopes, rock faces, and confined spaces, and is bordered by densely populated areas. An existing fiber optic cable route is located in the north side of the highway ROW and occupies most of the existing space, therefore making it necessary to use the south side of the ROW. It appears that blasting would be required in several locations, which would result in traffic stoppage of several lanes of traffic for approximately 30 minutes each day. Approval would have to obtained from the NYSDOT for such prolonged and repeated stoppages of traffic along this major corridor. Moreover, trees and

vegetation, which act as screening barriers to the populated areas, would need to be removed, causing residents along the Thruway additional noise impacts from this highly trafficked corridor.

Additionally, the portion of this alignment passing through Suffern lies in heavily trafficked, narrow streets. The Thruway is elevated through Suffern on bridges and vertical retaining walls. See Baker Report, Attachment 6, Segment A: Photos 1 & 2. A location to gain access to the Thruway from Suffern local streets on the proposed route does not exist. Due to the significant adverse environmental/land use impacts and the constructability constraints, Route 4 is neither reasonable, nor available. *See Virginia Elec & Power, supra.*

ROUTE 5: Thruway-Alqonquin ROW-Kakiat County Park to Palisades-Thruway Intersection; Route 304-Tennessee ROW -- Tennessee ROW River Crossing -- Tennessee Pipeline ROW to Saw Mill River Parkway (*see* NYSDOS Br. at 92, 87-88, 92-93; *see also* Baker Report, at 14)

For essentially the same reasons as those set forth for Routes 2 and 4, Route 5 is also not feasible from a design, construction, operation, and maintenance perspective. Baker Report, at 14. Route 5 is the same as Route 4, except that the balance of the parallel lay in the PIP (approximately 7.5 miles) would be replaced with approximately 4.6 miles parallel to State Route 304 to the Tennessee ROW (as discussed with respect to Route 2). Thus, impacts and constructability constraints respecting the Algonquin/Harriman segment, the State Route 304 portion, the Tennessee and ConEd ROWs, the Lake Tappan crossing, the Piermont Marsh, and Wickers Creek are all pertinent to Route 5, and render it unreasonable and unavailable.

ROUTE 6: CSX ROW-Bowline to Rte 303 -- Route 117 River Crossing -- Rte 117-Phelps Memorial Hospital to Saw Mill Parkway (*see* NYSDOS Brief, at 96, 93-96, 96-97; *see also* Baker Report, at 14)

Route 6 is also an infeasible alternative due to both fatal construction constraints and severe adverse environmental effects that would result to protected resources. Baker Report, at 14.

Route 6 follows the CSX railroad south for approximately 7.8 miles. As described in the case of Route 3 above, this section of CSX railroad has numerous feasibility constraints, including inadequate workspace and a tunnel section under Hook Mountain. Baker Report, Attachment 6, Segment H: Photo 1. From there, the route crosses through the middle of an enormous, deep quarry (permitted to over 500 feet below the Hudson River) and then traverses cross-country to Nyack Beach State Park. Construction through the quarry is not possible, and slight deviations around the quarry (in particular along Snake Hill Road) would unacceptably place the pipeline in several severe side slope areas.

The western landing of this route is situated in dedicated parklands -- Hook Mountain State Park and Nyack Beach State Park, both of which are National Natural Landmarks. The only available workspaces are the parking lots serving the parks. Baker Report, Attachment 6, Segment K: Photo 2. The entrances to the parking lots are historic access roads with hand-laid, vertical stone walls that would most certainly be damaged or destroyed by construction vehicles. *Id.*, Attachment 6, Segment K: Photo 1. The seawall along the Hudson River would most likely be severely damaged as well. The park would also have to be closed for at least several months to complete the required pipeline construction activities in this area. The

eastern shore traverses Rockwood Hall State Park and/or Phelps Memorial Hospital lands. The bore under the railroad on the eastern shore would be difficult in light of the limited workspace available. It is likely that the rock faces along Route 117 would require blasting to increase workspace. *See* Baker Report, Attachment 6, Segment L: Photo 1

Accordingly, numerous constraints make Route 6 not constructable and, hence, not an available alternative. Route 6 is also not a reasonable alternative, given the severe adverse, permanent impacts that would result to Hook Mountain State Park, Nyack Beach State Park, and Rockwood Hall State Park. *See Virginia Elec & Power, supra,* *160-162.

ROUTE 7: CSX ROW-Bowline to Lovett- - Lovett Power Plant River Crossing -- Electric Transmission ROW-Indian Point to Rte 9 *(see* NYSDOS Br. at 97-99; *see also* Baker Report, at 14)

Route 7 likewise fails to be a viable alternative due to a multitude of construction constraints and environmental impacts. Baker Report, at 14. Route 7 heads north from the FERC-approved route and follows the CSX railroad for approximately 3.8 miles to the Lovett Power Generation Plant. It then crosses the Hudson River, landing on the east side of the river just south of the LaFarge Gypsum plant. From there, the route follows ConEd's electric transmission ROW for approximately 3 miles until it rejoins the FERC-approved route.

Route 7 has multiple feasibility constraints at numerous locations along the CSX railroad where there is no workspace or ROW available for use. Some sections have retaining walls that leave room only for trains. In other areas, the engineered rail foundation (bed) is sloped and takes up all available space in the ROW. *See* Baker Report, Attachment 6, Segment S: Photos 1 & 2. In many places, there are residences and/or business structures immediately

adjacent to the railroad ROW, leaving no pipeline workspace. Some locations are fill areas and have only 10 feet on each side of the rail before they slope up to 40 feet in height. Electric poles typically occupy one side of the ROW, and often drainage ditches along the tracks preclude any workspace for construction.

At one point, this route passes through Stony Point Park, a state park that is a National Historic Landmark and is maintained by the Palisades Interstate Park Commission. The park is accessed by an historic bridge that crosses over the railroad tracks, and immediately to the west of the bridge is an historic stone archway. The railroad tracks pass through a narrow rock cut underneath this bridge and immediately adjacent to the stone archway. The rock cut in this area is very narrow and would have to be widened by at least 50 feet, which would destroy the character of this entranceway. *See* Baker Report, Attachment 6, Segment 5, Photo 1. Approximately 5,000 cubic yards of rock and the historic bridge would be permanently removed in this process.

Moreover, the OBG Report's suggestion regarding pipe installation inside extended lengths of casing is not an acceptable construction method. As previously noted, this would result in a dangerous situation because the pipeline's cathodic protection system would be jeopardized. Due to a shielding effect from over 3.8 miles of casing, it is extremely likely that the pipeline would electrically short against the casing. This could lead to pipeline failure. Thus, the OBG Report's suggestion does not alleviate construction problems along the railroad ROW.

Additionally, the Hudson River crossing is probably not feasible at Lovett, although a physical inspection of the site to confirm that judgment was not possible. However, observation of the Lovett Plant from a nearby property did not reveal an adequate workspace. It

is possible that marginally adequate staging might be available at the Tilcon quarry immediately south of Lovett; however, no route is available through the Tilcon property due to ongoing operations, steep side slopes, and a large hazardous material containment facility within the property. Moreover, for the reasons discussed above, there is no feasible way to route the pipeline to that location.

The route from the eastern shore follows an electric transmission ROW. The crossing of State Route 9 in Buchanan is infeasible due to extensive rock walls close to the highway, which preclude adequate room to bore the highway. The crossings of State Route 9A and the railroad ROW leading to Montrose Station Road would be extremely difficult because of a small pond, the railroad, the highway, and a steep slope. *See* Baker Report, Attachment 6, Segment O: Photos 1 & 2. Subsurface conditions, such as solid rock, may make boring and other construction activities very difficult in this area.

Accordingly, due to workspace and other physical constraints, Route 7 is not constructable and, hence, is not an available alternative. Route 7 would also result in permanent adverse environmental impacts to Stony Point Park National Historic Landmark. *See Virginia Elec & Power, supra,* *160-162.

ROUTE 8: Electric Transmission ROW-Bowline to Lovett -- Lovett Power Plant Crossing -- Electric Transmission ROW-Indian Point to Rte 9 (*see* NYSDOS Br. at 98-99, 97, 99; *see also* Baker Report, at 15)

Route 8 fails for the construction-related reasons described for Route 7; additionally, however, the beginning portion of this route presents enhanced and additional construction impossibilities. Baker Report, at 15.

Route 8 is the same as Route 7, except that an Orange & Rockland electric transmission ROW is followed to Lovett instead of the CSX railroad. This ROW is approximately 125 feet wide, 4.2 miles long, and already contains two sets of electrical towers and a high pressure natural gas pipeline. Baker Report, Attachment 6, Segment Q: Photo 1 Hundreds of residences line the ROW along both sides for significant portions of its length. The electrical transmission towers are literally wedged in between two rows of residences and markedly steep slopes. There is inadequate room to locate any additional facilities, let alone construct a major pipeline on or adjacent to the electrical transmission ROW for most of this segment. Again, the absurdity of this proposed alternative would be evident to anyone making a simple field visit. The balance of the route from Lovett to its interconnection with the FERC-approved route suffers from the same feasibility constraints as described for Route 7, above. *See also* Baker Report, Attachment 6, Segment O: Photos & 2. Lastly, the route requires construction through a closed landfill that contains ash from the Lovett facility.

Accordingly Route 8 is unconstructable and, therefore, not an available alternative. *See Virginia Elec & Power, supra,* *160-161.

ROUTE 9: Palisades-Algonquin ROW, South Mountain to Lovett Electric Transmission ROW River Crossing -- Electric Transmission ROW-Indian Point to Rte 9 (*see* NYSDOS Brief, at 100, 100, 100-101; *see also* Baker Report, at 16)

Route 9 is unconstructable and entails significant adverse impacts to the PIP; thus, it is not an available or reasonable alternative. Baker Report, at 16.

Route 9 follows the PIP for approximately 4.2 miles north from the FERC-approved route. The same types of impacts along the PIP as described for Route 1 would occur

for this section as well but only approximately 33 acres of mature forest would need to be clear cut. Although this portion of the route along the PIP appears to be constructable, the impacts would be severe, profound, and permanent, as described in the case of Route 1.

Route 9 then follows an electric transmission ROW (owned by Orange & Rockland Utilities) and two parallel Algonquin Gas Transmission pipelines for approximately 4.1 miles to the Hudson River. The existing utilities occupy all the available space along portions of the alignment that pass through several congested residential areas where there is simply no room for any additional transmission lines. Baker Report, Attachment 6, Segment M: Photo 1 The route then crosses the Hudson River under Orange & Rockland's transmission lines. The approach to the eastern shore has adequate workspace, and the transition from the river through the shoreline and to landfall is good. The western approach is difficult, however. Workspace is limited, and a narrow road and railroad must be crossed at the water's edge. A significant amount of grading would be required in this area. From the eastern shore of the Hudson River, the route follows ConEd's electric transmission ROW and then rejoins the FERC-approved route. As described in the case of Route 7, above, the bore under State Route 9 is not feasible.

Accordingly, Route 9 is not an available or reasonable alternative. *See Virginia Elec & Power, supra,* *160-162.

ROUTE 10: Palisades-Algonquin ROW, South Mountain to Lovett -- Algonquin ROW River Crossing -- Algonquin ROW to Electric Transmission ROW (Buchanan) to Town of Cortlandt (*see* NYSDOS Br. at 101-103; *see also* Baker Report, at 16)

Route 10 suffers from the same fatal flaws as Route 9. Baker Report, at 16, & Attachment 6, Segment M: Photo 1; Segment O: Photos & 2. It crosses the Hudson River adjacent to Algonquin's ROW, where Algonquin's pipelines and other facilities occupy the entire existing ROW and all available workspace. On the western shore, a bore under a road and railroad would be impossible, as it would require a 50-foot deep bore pit, which is not feasible. Further, there is no staging area for a directional drill or any way to pull back the pipe from the river as suggested by O'Brien & Gere.

Accordingly, Route 10 is not constructible and, thus, is not an available alternative. *See Virginia Elec & Power, supra,* *160-161

ROUTE 11: Palisades Dobbs Ferry Alternative 2 (*see* Village Amicus Brief, at 56-58, & Exhibit 2, at 21-26; *see also* Baker Report, at 16)

Route is neither available (due to construction constraints) nor reasonable (*i.e.* due to its severe and permanent environmental impacts). Baker Report, at 16.

Route is basically the same as Route 1, except it that substitutes approximately 1.4 miles along the Thruway, 5.9 miles along the CSX railroad, and .4 miles along Tennessee's ROW, in lieu of approximately 7.5 miles along the PIP. As a consequence, this route suffers from multiple fatal flaws, including the previously described impacts to the PIP and nearby residences, the infeasible construction locations along the CSX railroad, the infeasible route along Tennessee's ROW in New Jersey, the permanent adverse impacts to Tallman Mountain State Park and the Palisades, the significant and permanent adverse effects to Piermont Marsh, the infeasible river crossing location and section through Wickers Creek, and the impossible segment through several residential communities in Dobbs Ferry

Accordingly, Route 11 is not an available or reasonable alternative. *See Virginia Elec & Power, supra,* *160-162.

ROUTE 12: Hudson River South "Clarkstown/Route 117" (*see* Villages Br. at 58-61; Villages Exhibit 2 at 27-32; *see also* Baker Report, at 17)

Route 12 suffers from the same fatal defects as Route 1 (respecting the PIP), and Route 6 (regarding its construction constraints and impacts to Hook Mountain, Nyack Beach, and Rockwall Hall State Parks), and additional physical and workspace constraints along the Thruway portion of this route. Baker Report, at 17. Thus, it is neither available, nor reasonable.

Route 12 parallels the PIP for approximately 5.1 miles south from the FERC-approved route. The impacts along this segment have been previously discussed in the case of Route above. The route then follows approximately 1.4 miles of the Thruway, follows along Snake Hill Road, and then traverses cross-country to Nyack Beach State Park. From there, the route crosses the Hudson River and follows Route 117 to the FERC-approved route on the North County Trail.

Construction along the Thruway would require blasting in several locations, which would result in traffic stoppage of several lanes of traffic for approximately 30 minutes each day. No feasible route along Snake Hill Road is available due to several severe side slope areas. The western shore of this route would be situated in dedicated parklands -- Hook Mountain State Park and Nyack Beach State Park (both National Natural Landmarks). As already described for Route 6 above, the only available workspaces are the parking lots serving the parks. The entrances to the parking lots are historic access roads paralleled by hand-laid, vertical stone walls that would most certainly be damaged or destroyed by construction vehicles.

The seawall along the Hudson River would most likely be severely damaged as well. Nyack Beach State Park would have to be closed for at least several months to complete the required pipeline construction activities in this area. On the eastern shore, the route traverses Rockwood Hall State Park and/or Phelps Memorial Hospital lands. The bore under the railroad on the eastern shore would be difficult due to limited workspace.

Accordingly, Route 12 is not an available or reasonable alternative. *See Virginia Elec & Power, supra,* *160-162.

ROUTE 13: Hudson River North Alternative 1 (*see* Villages Br. at 61-65; Villages Exhibit 2 at 33-36; *see also* Baker Report, at 17)

Route 13 fails for the same reasons as Route 10, as well as because of additional impacts to, and workspace and construction constraints associated with, the portion of the route through Harriman State Park and along the Algonquin ROW. Baker Report, at 17.

Route 13 is the same as Route 10, except that it follows Algonquin's ROW from the FERC-approved route through Harriman State Park to the PIP (approximately 5.0 miles) instead of following the PIP itself. This is the same route identified by the FERC as the "Hudson River North Alternative 1" in its FEIS. The impacts and infeasibility of this route, as documented in FERC's FEIS (Millennium Exhibit 2, Vol. 1, at 6-4, 6-5), demonstrate that is it neither available nor reasonable.

The first 3.7 miles of this route are within Harriman State Park, which is listed on the National Register of Historic Places. The route would be immediately adjacent to and would significantly expand the existing Algonquin ROW, which is only about 75 feet wide. That ROW

currently contains two or three pipelines, a cathodic protection line, and, in some locations, a telecommunications line. This portion of Route 13 includes significant stretches of difficult side slope construction that would require extra workspace -- up to 80 feet wide in moderately steep areas and up to 10 feet wide in areas with severe side slopes. Construction through this area would require clearing approximately 19 acres of mature forest, of which approximately 13.7 acres would have to be maintained as permanent ROW. Approximately 44 acres would be extensively graded, thus permanently impacting the existing topographic and rock features.

Continuing east to the PIP, Route 13 would cross at least four different residential and/or recreational areas. Following the powerline ROW from south to north, they are:

- Palisades Court - Thirteen houses are immediately adjacent to the eastern side of the powerline ROW. The terrain is severely sloped along the western side of the ROW.

  Platel Brauhause – This recreational area has numerous outside activity areas such as tennis courts, ball fields, and picnic grounds as well as outbuildings necessary for operations. These facilities are immediately adjacent to the existing ROW.

- Calls Hollow Road crossing - Residences are immediately adjacent to the ROW on the west side; the terrain is severely side sloped on the east side.

  Calls Hollow Road trailer park – Trailers are immediately adjacent to both sides of the existing ROW; the powerlines cross this area overhead. Pipeline installation would require the removal of approximately 20 trailers.

Thus, the construction and human impact constraints associated with this route are patent.

Nor is the construction of Route 13 made any more feasible by O'Brien and Gere's suggestion to use "stove pipe" or horizontal directional drill ("HDD") construction methods. Indeed, O'Brien & Gere's suggestion in this regard merely underscores the importance of conducting thorough field investigations for each portion of every route (which O'Brien &

Gere clearly did not do). As described above, there are many structures immediately adjacent to the existing ROW, leaving no room to place the pipeline. Thus, the method used to construct the pipeline is irrelevant, since there is, simply, no room to place the pipeline. Furthermore, additional room cannot be created by undercutting slopes. Undercutting (to create small benches for pipeline installation) results in destabilizing slopes and, thus, contravenes sound design principles. This is particularly so in this region, given that a significant number of these slopes already have residences at their summits. Additionally, there are no minor reroutes either on existing corridors or otherwise that could be used to avoid these residential and recreational areas. From this point east to the Hudson River, Route 13 is the same as Route 10 and, thus, has all the same fatal flaws.

Accordingly, Route 13 is not an available or reasonable alternative. *See Virginia Elec & Power, supra,* *160-162.

ROUTE 14: Hudson River North Alternative 2 (*see* Villages Br. at 61-65; Villages Exhibit 2 at 33-36; *see also* Baker Report, at 18)

Route 14 also fails for the same reasons as Route 10, together with additional workspace and other physical constraints along its beginning segment, which render it unconstructable and, hence, unavailable. Baker Report, at 18.

Route 14 is the same as Route 10, except that it follows a powerline ROW for approximately 1.1 miles and then traverses cross-country on a new ROW for approximately 3 miles to the PIP (instead of following the PIP itself). This is the same route identified by the FERC as the "Hudson River North Alternative 2" in its FEIS. The impacts and constraints

associated with this route, which are well documented in the FERC's FEIS (Millennium Exhibit 2, Vol. 1, at 6-5), demonstrate that Route 14 is infeasible.

Route 14 follows an existing electric transmission ROW through a portion of the Palisades Interstate Park, a National Register property, to US Route 202. Between US 202 and the intersection with Route 10 at the Algonquin pipeline ROW, no existing corridors or other workspace are available. Although USGS topographic mapping indicates that ample space is available for a new pipeline ROW through this area, the base map dates to 1955 and thus does not show the significant expansion of residential neighborhoods that has subsequently occurred in this area. Again, this underscores the need for ground-truthing information through field investigation before opining on the feasibility of a pipeline route drawn on a map.

After crossing US 202, Route 14 leaves the existing ROW and passes through a residential subdivision. After that, it crosses Minisceongo Creek before entering a municipal park that was once part of the grounds of the Letchworth Village State Mental Hospital Route 14 then crosses Thiells–Mt. Ivy Road, an additional segment of municipal park, and Letchworth Village Road before crossing the grounds of the Letchworth Village Development Center. After crossing Willow Grove Road, this route passes through another residential subdivision, another municipal park, and a third residential subdivision before intersecting Route 10. From that point east, Route 14 is identical to Route 10 and has the same previously described fatal flaws. Once again, the proposed method of installing the pipeline is irrelevant, as structures are immediately adjacent to the existing ROW, leaving no location to place the pipeline. In addition, unlike the in-street construction proposed by Millennium in the City of Mount Vernon, New York, roads near Route 14 are too winding to permit pipeline installation and too far apart to allow for reasonable detours.

Accordingly, Route 14 is not constructable; therefore, it is not an available alternative. *See Virginia Elec & Power, supra,* *160-161

ROUTE 15: Navigation Channel Alternative (*see* Villages Br. at 65-67; Villages Exhibit 2, at 37-38; *see also* Baker Report, at 19)

Route 15 is also not a viable option. Baker Report, at 19. Route 15 would place the pipeline for an extended length (over 38,000 feet) within the Federal navigation channel and then cross the river in the vicinity of Route 117. The route would then follow Route 117 to its intersection with the FERC-approved route on the North County Trail. Parallel construction for this length within the navigation channel would be a dangerous proposition. The pipeline would have to be buried with extra cover (15-feet below the river bottom in the navigation channel) for the entire length. This segment would actually significantly increase the length, time, and impacts of construction in Haverstraw Bay. Construction could not be completed within the 2½-month designated window that has been mandated, and it is extremely doubtful that the US Army Corps of Engineers would permit joint occupation of the Federal navigation channel for this extended length. It should be noted that this route would still extend approximately 4,000 feet within the Haverstraw Bay Significant Fish and Wildlife Habitat area, outside of the Federal navigation channel.

Due to legal impediments respecting joint occupation of the navigation channel, this route is unavailable. In any event, because similar (if not enhanced) potential adverse impacts to Haverstraw Bay are implicated, this alternative is not reasonable. *See Virginia Elec & Power, supra,* *160-162.

b. The Other New Proposed Alternative Routes Are Not Reasonable And Available

(1) Croton's Wellfield

The NYSDOS's unspecified "diversion" from the Wellfield is patently vague and fails the "specificity" requirement of 15 C.F.R. § 930.63(d). *See* NYSDOS Br. at 103 (failing to identify any specific routing alternative; stating only that "there is sufficient open space in the area of the well field to make a small diversion from Millennium's proposed route outside of the well field to avoid impacts to these areas and ensure consistency with the Village's approved LWRP and the CMP"). Thus, this is not a viable "alternative" that may be considered on appeal *See Virginia Elec & Power, supra*, *162

To the extent that Croton identifies two alternatives, those alternatives likewise fail. *See* Villages Br. at 75-76; Villages Exhibit 2 at 45-46 (suggesting two alternative routes: (1) "to the northeast through heavily treed areas for a distance of approximately 2000 feet, which is approximately 500 feet longer than the proposed route," with the pipe located 25 feet outside the boundary of Zone 1, and requiring "securing of a right-of-way 50 feet wide and extensive tree clearing," with an added cost of $184,000; and (2) to the southwest to be installed in specified residential streets, with the approximate length of the southwest alternative being 8,000 feet versus the proposed route of 1,500 feet and a cost of $4.4 million, instead of $550,000).

These alternatives would entail significant environmental, construction, safety, land use, and human impact constraints, as well as increased costs that are unjustified due to the lack of any tangible environmental benefit. *See* Baker Report, at 22 (discussing Wellfield impacts, correcting OBG Report's erroneous assessment of the impacts, and demonstrating the infeasibility of alternatives suggested by Croton and the OBG Report). More specifically, neither

alternative route is reasonable from a construction or design perspective. The "Northeast Alternative" would require side slope construction through a steep area that has several slips. This route would also require two additional crossings under ConEd's powerline facilities, a situation that the NYPSC and the FERC sought to limit. These slips could easily compromise the integrity of the pipeline during operation and place not only Millennium's facilities in jeopardy, but ConEd's as well. The "Southwest Alternative" would place the pipeline in multiple local roads which are narrow and winding. Even with the use of manufactured bends, it is doubtful that the pipeline would fit into this narrow corridor. Construction would require closure of these local roads for weeks, if not months, and suitable detours are not available. Accordingly, these suggested alternatives are neither available nor reasonable.

(2) The Arboretum

The NYSDOS's so-called "alternative" regarding the Arboretum (*i.e.*, to make a "small," but unspecified "diversion") also does not meet the specificity requirement of the CZMA's regulations. *See* 15 C.F.R. § 930.63(d); NYSDOS Br. at 103 (failing to identify any specific routing alternative; stating only that "there is sufficient open space in the area of Arboretum . . . to make a small diversion from Millennium's proposed route outside of the well field to avoid impacts to these areas and ensure consistency with the Village's approved LWRP and the CMP"). Thus, that "alternative" cannot be regarded as available or reasonable under the CZMA. *See Virginia Elec & Power, supra,* *162

To the extent that Croton suggests an alternative -- *i.e.*, a different construction technique (directional drilling rather than open cut) -- that alternative is neither reasonable nor available. *Contrast* Villages Br. at 76 & Villages Exhibit 2, at 45 (suggesting directional drilling and installation of a 24-inch diameter pipe beneath the Arboretum, with associated costs

allegedly 6 to 10 times greater than that of proposed open cut method) *with* Baker Report, at 22 That this methodology is not "available" is evidenced by the apparent lack of sufficient workspace outside the Arboretum to stage the drilling equipment on one side and weld together lengthy pipe string on the other. For example, the 1,000-foot distance recommended in the OBG Report is not possible because an installation of this short distance would require exceeding the pipeline's stress-free radius. Additionally, however, HDD installation near ConEd's powerlines is not recommended in any event in light of the concerns expressed by both the NYSPSC and ConEd. Due to the depth of the installation and the inability to routinely confirm the cathodic protection and voltage mitigation effectiveness, an HDD installation in this location would not be in the best interest of either the electric facilities or the pipeline. Thus, HDD construction is not "available," given the physical and technical impediments to the construction. *See Virginia Elec & Power, supra*, *160-161

Further, even if available, this alternative is not reasonable. Given the extensive avoidance, mitigation, and restoration measures to which Millennium has committed, impacts to the Arboretum from the proposed open cut construction method will be slight and of no ecological import. Thus, any environmental benefit from directional drilling will also be slight and cannot justify the order of magnitude increase in cost posed by HDD. *See Virginia Elec & Power, supra,* *161; *see also* Baker Report, at 22 (stating that the OBG Report's cost estimates are "significantly understated").

(3) The Catskill Aqueduct/ Bryn Mawr Siphon

As already explained, issues pertaining to the Bryn Mawr Siphon are not legitimate considerations in this appeal because no coastal effects from the pipeline crossing at the Siphon have been alleged or demonstrated.

In any event, the NYSDOS's so-called "alternative" to the Aqueduct crossing at the Bryn Mawr Siphon fails due to a lack of specificity. *See* NYSDOS Br. at 103-104 (stating as an alternative: "Millennium could follow the existing utility corridor, as proposed, except that instead of following the Sprain Brook Parkway to the Grassy Sprain Brook Parkway where it would cross the Bryn Mawr Siphon, it could deviate from the Sprain Brook Parkway to the New York State Thruway right-of-way, avoiding the Siphon, and then reconnect with the proposed Grassy Sprain Brook parkway route to the proposed terminus agreed to in Mount Vernon"); *Virginia Elec & Power, supra,* at *160-162.

Even if deemed to be sufficiently specific, this suggested alternative must be rejected because it is not available This suggested route is not feasible as it contains numerous flaws. The west side (cut side) of the Thruway at the crossing location has a rock cliff immediately adjacent to the roadway. The east side (fill side) has a steep incline consisting of fill material and supports the Thruway surface. This area is also on a substantial curve in the Thruway. In order to stay as far away from the Aqueduct valve chamber (located immediately to the east of the Thruway) as possible, the pipeline would have to be installed along the western edge of the Thruway. This would result in a bore well over 600 feet in length, far beyond the maximum bore length of 250 feet. Regardless of the bore length, the proximity of the rock cliff prevents creation of a receiving pit, and thus a bore is infeasible. Further complicating this

crossing site is the location of an apartment complex and the Con Ed transmission towers carrying six of the main electrical circuits that provide power to New York City. As a consequence, the pipe cannot be adequately bent, even with the use of manufactured bends, to reconnect with the FERC-approved route. Other pipe installation methods were also considered, but the available workspace prevents their use. As such, this alternative is not "available" due to the physical and technical constraints to construction. *See Virginia Elec & Power, supra,* *161

c. The NYSDOS's Proposed Termination Of The Project On The West Side Of The Hudson River Is Not An Available Alternative

The first alternative suggested by the NYSDOS in its objection to the Millennium Project was to terminate the Project on the west side of the Hudson River, thereby avoiding the proposed crossings of the Hudson River, the New Croton Reservoir Watershed, and the Catskill Aqueduct. This proposed alternative is not "available" under applicable CZMA precedent and thus cannot sustain the NYSDOS's objection.

An alternative proposed by a state agency must be "available" in two respects to merit consideration under the CZMA. As the Secretary has stated:

> "For a proposed alternative to be 'available,' [1] the proponent of the proposed project must be able to implement the alternative and [2] the alternative must achieve the primary or essential purpose of the project."[48]

It would of course be physically possible for Millennium to terminate the Project on the west side of the Hudson River, and thus the first alternative proposed by the NYSDOS is "available" in that theoretical respect. However, the Project's essential purpose is to serve New

[48] Decision and Findings in the Consistency Appeal of Virginia Electric & Power Co. (May 19, 1994), at 160.

York City markets, and that fundamental purpose could not be achieved if the Project were terminated on the western shore of the Hudson River. Accordingly, this proposed alternative is not "available" for CZMA purposes.

From the outset, the principal purpose of the Millennium Project has always been to serve critical natural gas requirements in New York City. Indeed, Millennium proposes to transport half of its pipeline's capacity a distance of 420 miles from the Canadian border to the pipeline's terminus to serve New York City markets. Without the portion of the Project from Bowline Point across the Hudson River and through Westchester County to New York City, the Project would plainly be uneconomic: Building 90% of the pipeline (390 miles) to deliver 50% of the pipeline's capacity would not even permit the recovery of costs and thus would never be seriously considered. Nor is there any reasonable or environmentally preferable alternative means of transporting the gas from Bowline Point to New York City, as the FERC concluded.

In its FEIS, the FERC stated that suggestions to terminate the Project at Bowline raised an issue of the "need for the pipeline to extend through Westchester County" that would be decided later in its order on the merits of the Project (Millennium Exhibit 2, Volume 1, at 6-8). In that subsequent order on the merits, the FERC concluded that a need for the entire Project, including the portion across the Hudson River and through Westchester County to serve New York City markets, had been demonstrated. Among other things, the FERC noted that the NYPSC had supported the Project because of the need for more gas pipeline infrastructure to meet New York City's energy requirements (Millennium Exhibit 1, at 62,321 n.56):

> "[T]he need for new pipeline capacity into New York City is critical because existing capacity is constrained. The NYPSC states that New York City needs 300 MW of in-city electric generation immediately and 200 MW each year thereafter to meet

> expected demand. The NYPSC also states that this new generation must be within city limits because of transmission constraints and must be almost exclusively gas-fired because of environmental guidelines."

The FERC ultimately determined that the Millennium Project was necessary to meet that critical need for new pipeline capacity into New York City (*id.* at 62,322):

> "Accordingly, we find that in order to meet the growing energy needs of the northeast, including the New York City metropolitan area, new infrastructure is needed to bring additional natural gas supplies to market. . . . We conclude that Millennium's proposals are viable from an economic and environmental standpoint and can meet the needs of the expanding market on a timely basis. . . . Thus, we find that Millennium's proposals are in the public convenience and necessity."

In short, the FERC considered the alternative of terminating the Project at Bowline and concluded that the entire Project, including the eastern portion from Bowline to New York City, was necessary and in the public interest. *Id.* at 62,308. To be commercially viable and to meet the critical power generation requirements projected by the FERC and the NYPSC, the Millennium Project must directly serve New York City markets, as proposed. The termination of the Project on the western shore of the Hudson River, as proposed by the NYSDOS, would not permit the Project to achieve its fundamental purpose and thus is not an "available" alternative for CZMA purposes.

In its initial brief, the NYSDOS speculates, irrelevantly, that Columbia Gas Transmission Corporation ("Columbia") might upgrade its aging Line A-5 west of the Hudson River if the Millennium Project were not constructed. Mixing apples and oranges, the NYSDOS then asserts that "Millennium will be able to service its current customer base on the west side if it were to terminate the pipeline on the west side of the river." NYSDOS Br. at 106. What the NYSDOS fails to comprehend is that Millennium and Columbia are two separate and distinct

entities, that Millennium has no "current customer base or facilities," and that the Millennium Pipeline Project is not viable unless it can serve the New York City market, as the FERC found.

d. The NYSDOS's Proposed Route Revisions Do Not Constitute An Available Alternative

The second alternative proposed in the NYSDOS's objection is for Millennium to alter its FERC-approved route to avoid a crossing of Haverstraw Bay and the Catskill Aqueduct. More specifically, the NYSDOS suggests that Millennium should, first, "route the Hudson River crossing of the pipeline north and outside of the designated Haverstraw Bay habitat, near or adjacent to the existing Algonquin pipeline crossing of the Hudson River" and then, second, "consider existing pipeline rights-of-way that avoid the New York City drinking water supply and delivery system." Millennium Exhibit 10, at 15.

For the reasons Millennium provided in its Initial Brief, and as further explained in this Reply Brief as well, neither a route north of Haverstraw Bay (referred to as the "Hudson River North Alternative" in the FEIS) nor the suggested downstream route to New York City is an "available" alternative. Millennium Initial Br. at 100-106; page 105 *supra*.

e. The NYSDOS's Proposed Use Of Excess Capacity In The Existing Algonquin Pipeline Is Not An Available Alternative

The NYSDOS's last suggested alternative is for Millennium to "use excess capacity in the existing Algonquin pipeline" that crosses the Hudson River north of Haverstraw Bay (Exhibit 10, at 15), thus theoretically eliminating the need for a Hudson River crossing. This proposed alternative is also not available and thus provides no basis for sustaining the NYSDOS's objection to the Project.

Most significantly, there is no evidence at all that there is any "excess capacity in the existing Algonquin pipeline." In fact, a recent review of Algonquin's "LINK" Customer Interaction System showed that there was no unsubscribed capacity available at all across the Hudson River (*i.e.*, between Algonquin's Stony Point and Southeast stations). Millennium Exhibit 77. Other interstate pipelines in the Northeast are also running at close to capacity. Indeed, that is one of the chief reasons why the Millennium Project has been proposed. As the FERC found in its December 19, 2001 order (Millennium Exhibit 1, at 62,308), the Millennium Project will "help relieve constraints on other area pipeline systems."

Moreover, the Algonquin pipeline is incapable of delivering 350,000 Dth of gas per day to New York City markets, since the pipeline never comes within 25 miles of the city. Nor does Algonquin interconnect with any interstate pipeline that has the excess firm capacity to deliver such quantities of gas to New York City markets. Again, the Millennium Project has been proposed to achieve that objective, which cannot be met by any existing pipeline.

In short, the NYSDOS's suggested use of capacity in the Algonquin pipeline to serve New York City markets is simply not an available alternative. There is no evidence that any excess capacity in the Algonquin pipeline exists or that Algonquin could ever deliver the necessary gas volumes to such markets.

f. The Alternatives Proposed By Others Are Not Available Alternatives

Various other alternatives have also been advanced by other opponents of the Project. First, Croton's "alternatives" include a directionally-drilled crossing of the Hudson River. Second, Riverkeeper suggests a "Tappan Zee crossing." Third, Croton and Cortlandt postulate various "system" alternatives. These alternatives merit little or no consideration.

(1) Directionally-Drilled Crossing

Croton also suggests that the 2.1 mile crossing of Haverstraw Bay could be accomplished using a horizontal directional drill ("HDD"), in particular citing the O'Brien & Gere Report and information received from Cherrington Corporation, a directional drilling contractor. Unfortunately, Croton and O'Brien & Gere completely mischaracterize Cherrington's opinion.

As pointed out by Baker (Millennium Exhibit 78 at 20) and clearly admitted by Cherrington in its correspondence with O'Brien & Gere, "project of this magnitude is completely outside the realm of conventional HDD technology" and the so-called "Environmental Beneficial Boring" technology "has had limited opportunities for use therefore placing it in the realm of research and development also." In fact, a 2.1 mile HDD would represent a crossing more than an order of magnitude longer than has accomplished by Cherrington (or any other firm) using any boring techniques. Cherrington offers no specifics on how this order of magnitude increase will be achieved and simply states that "[w]e have observed several such evolutionary advancement . . . ." This is hardly the basis for a sound construction plan and Haverstraw Bay is far too sensitive an area to even attempt crossing technologies which are in the "realm of research and development".

Moreover, such an attempted crossing with an unproven technology would devastate the sensitive bottom sediments either by introducing huge volumes of bentonite clay or, worse, a complete collapse of the drilled hole with no way to remediate the impacts. It is highly unlikely that either the NY Department of Environmental Conservation or the US Army Corps of Engineers would permit such a poorly developed construction plan. Given that these drilling

methods are not within the realm of proven technology, they are not "available" alternatives, and further investigation of them for this crossing location is not warranted.

(2) Tappan Zee Crossing

Riverkeeper suggests that Millennium follow the Thruway right-of-way in Rockland County and cross the Hudson River in the vicinity of the Tappan Zee Bridge. No mention was made of how this alternative would be routed to Exit 15 of the Thruway, nor how it would interconnect with the balance of the FERC-approved route. Given the lack of specificity, it is difficult to provide a detailed assessment of Riverkeeper's proposal. However, portions of the Thruway were investigated by Baker (see discussion on Segments A and U in the Baker Report, Millennium Exhibit 78) and confirmed to be infeasible from a design, construction, operation, and maintenance perspective. In addition, this Hudson River crossing location (along with the required route segments to interconnect with the balance of the Millennium Project) was thoroughly studied by Millennium and the FERC, and documented in the FEIS beginning at page 6-6. Riverkeeper's characterization that this alternative was "dismissed because the Thruway Authority expressed concern with the possible interference of the Pipeline with the reconstruction of the Tappan Zee Bridge." is misrepresentative of FERC's actual comprehensive assessment, which states in pertinent part (Millennium Exhibit 2 at 6-7):

> "The Tappan Zee Bridge Alternative would be extremely difficult to construct and would result in significant impact on the Palisades Parkway, I-287, the parks in Nyack and Tarrytown, and dense residential and commercial development in both Rockland and Westchester Counties, particularly near the Hudson River where in-street construction would be needed. In addition, the Hudson River crossing would still be within the designated EFH and habitat for the endangered short-nose sturgeon. The longer crossing length would add to the construction time and could result in additional impacts on the Hudson River and its species. Further, in its comments on the SDEIS, the New York State Thruway

> Authority stated that it is initiating an environmental review process that will consider alternatives to address the structural and operational needs of the Tappan Zee Bridge and the I-287/I-87 corridor. One of the alternatives under review is replacing the existing bridge at a location near the old one. Since this alternative would require a longer crossing of the Hudson River, would still be within designated EFH, and would simply transfer residential impacts from one area to another, we do not recommend its use."

Riverkeeper's attempt to contrast Millennium with Keyspan's agreement to install its pipeline in the shoulder of the Long Island Expressway is also disingenuous. First of all, it should be obvious that pipeline routing is, by its very nature, specific to the precise terrain and geographical and environmental conditions encountered by a project, and thus the routing of Keyspan's pipeline is of no relevance here. Second, Riverkeeper's claim that Millennium is unwilling to adopt appropriate mitigation procedures is also completely unfounded. The record is replete with numerous innovative, effective, and comprehensive design, construction and mitigation commitments (including but not limited to the innovative lay-barge crossing of the Hudson River) that Millennium has made in order to offset the impacts the Project could create. Riverkeeper's insinuation to the contrary is unfounded.

(3) System Alternatives

Croton suggests that an expansion of the existing gas pipeline systems of Algonquin Gas Transmission Company ("Algonquin") and Texas Eastern Transmission, L.P. ("Texas Eastern") represents a reasonable "system alternative" to the Millennium Project. Croton Br. at 72-74. Similarly, Cortlandt contends that the "Iroquois Eastchester Expansion Project" and the "Northeast ConneXion project" constitute reasonable and available alternatives to Millennium. Cortlandt Br. at 44-46. These claims are also unfounded.

The FERC addressed and rejected these claims in its September 18, 2002 order. The FERC noted that its FEIS evaluated no fewer than 15 system alternatives, including the Algonquin/Texas Eastern Alternative favored by Croton and Briarcliff and the Eastchester project promoted by Cortlandt. As the FERC stated (Millennium Exhibit 1A, at 62,154):

> "The final EIS concluded that the 15 system alternatives were not reasonable or practical for several reasons, including the potential for at least equal or greater environmental impact. construction constrains, and the fact that the cost differential associated with modifying certain existing proposals would affect the likelihood of those modifications ever being proposed."

While Croton/Briarcliff contend that the FERC "ignored the potential use of turnback capacity" in evaluating the Algonquin/Texas Eastern alternative (Croton/Briarcliff Br. at 73), that is not true. In its September 18, 2002 order, the FERC reasonable concluded that turnback capacity was not a viable alternative (Millennium Exhibit 1A, at 62,144):

> "In general, we question the true availability of turn-back capacity to meet demand in the New York City area. In a recent study of gas demand in New England and the mid-Atlantic states, our staff concluded that all current industry studies 'agree that all customer groups [in the northeast] will maintain current consumption,' which leads to believe that there will continue to be a demand for the current existing capacity."

The FERC further concluded (*id.*):

> "Reliance on turn-back capacity does not address the need for additional capacity to support the predicted long-term growth in natural gas demand. Thus, we conclude that turn-back capacity would not be a viable alternative to Millennium's proposed pipeline."

As for Cortlandt's suggestion that the Eastchester project would be a reasonable alternative to the Millennium Project, the FERC also addressed and refuted Cortlandt's arguments in the September 18 Order. *See* Millennium Exhibit 1A, at 62,154-55. The FERC

defended its analysis and findings, noted the flaws in Cortlandt's contentions, and then stated (*id.*)

> "The final EIS concluded that the Algonquin/Iroquois System Alternative [that includes the Eastchester project] would have a greater impact than Millennium and was not a reasonable alternative to Millennium. We concur with this conclusion."

Finally, the "Northeast ConneXon" project that is endorsed by Cortlandt as an alternative to the Millennium Project is nothing more than a one-page concept that does not even have a defined route. This "alternative" has not been described with the specificity necessary to assess whether it would in any way be an available and reasonable alternative.

THE SECRETARY SHOULD OVERRIDE THE NYSDOS'S OBJECTION ON CZMA GROUND 2: THE MILLENNIUM PROJECT IS NECESSARY IN THE INTEREST OF NATIONAL SECURITY

A proposed project is "necessary in the interest of national security" and thus satisfies CZMA Ground 2 if a national security interest would be "significantly impaired" in the event that the project were not permitted to proceed. 15 C.F.R. § 930.122. In this case, a failure to permit the Millennium Project to proceed would significantly impair national security interests in at least two respects and thus satisfies the requirements of CZMA Ground 2.

First, from an international perspective, the Nation's energy security, which is a key component of our national security, would be significantly impaired if the Secretary did not permit the Project to proceed. In his 2003 State of the Union address, President Bush decried the